=> d bib ab ind 1

L6 ANSWER 1 OF 2 CA COPYRIGHT 2003 ACS
AN 94:188433 CA
TI Regulation of the basal and cyclic AMP-stimulated rates of glycogen synthesis in Escherichia coli by an intermediate of purine biosynthesis
AU **Leckie, Mary P.**; Porter, Sharon E.; Tieber, Virginia L.; Dietzler, David N.
CS Sch. Med., Washington Univ., St. Louis, MO, 63110, USA
SO Biochemical and Biophysical Research Communications (**1981**), 99(4), 1433-42
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
AB In E. coli, an abrupt increase in the rate of glycogen synthesis occurs at the onset of total N starvation. This increase occurs because of the loss of a N-contg. intermediate of purine biosynthesis (apparently, 5-aminoimidazole-4-carboxamide ribonucleotide) that inhibits glycogen synthesis. This inhibitory intermediate antagonizes the stimulation of glycogen synthesis by cAMP. The regulation of glycogen synthesis by this inhibitor provides the 1st link in understanding the reciprocal relation between growth rate and glycogen accumulation in E. coli.
CC 10-2 (Microbial Biochemistry)
ST glycogen formation regulation Escherichia
IT Escherichia coli
(glycogen formation by, regulation of, by purine synthesis intermediate)
IT 9005-79-2, biological studies
RL: FORM (Formation, nonpreparative)
(formation of, by Escherichia coli, regulation of, by purine synthesis intermediate)
IT 3031-94-5
RL: BIOL (Biological study)
(glycogen formation by Escherichia coli regulation by)
IT 60-92-4
RL: BIOL (Biological study)
(glycogen formation by Escherichia coli regulation by, inhibition of, by purine synthesis intermediate)
IT 9027-71-8
RL: BIOL (Biological study)
(of Escherichia coli, purine synthesis intermediates effect on)

L10 ANSWER 8 OF 9 CA COPYRIGHT 2003 ACS
AN 98:155727 CA
TI The in vitro expression of the gene for Escherichia coli ADP-glucose pyrophosphorylase is stimulated by cyclic AMP and cyclic AMP receptor protein
AU Urbanowski, Joseph; Leung, Patrick; Weissbach, Herbert; **Preiss, Jack**
CS Roche Inst. Mol. Biol., Nutley, NJ, 07110, USA
SO Journal of Biological Chemistry (**1983**), 258(5), 2782-4
CODEN: JBCHA3; ISSN: 0021-9258
DT Journal
LA English
AB The in vitro expression of glgC, the structural gene for E. coli ADP-glucose pyrophosphorylase [9027-71-8], was studied by measuring N-terminal dipeptide and tripeptide synthesis with plasmid pOP12, which carries the glgC gene. When cAMP [60-92-4] and cAMP receptor protein were added together, synthesis of fMet-Val and fMet-Val-Ser was stimulated .apprx.2.5-4-fold. The above tripeptide sequence is the known N-terminal sequence of the ADP-glucose pyrophosphorylase. Hence, cAMP and cAMP receptor protein might be involved in the genetic regulation of the expression of the glgC gene.

L10 ANSWER 6 OF 9 CA COPYRIGHT 2003 ACS
AN 99:154999 CA
TI Pyrophosphate may be involved in regulation of bacterial glycogen synthesis
AU **Preiss, Jack**; Greenberg, Elaine
CS Dep. Biochem. Biophys., Univ. California, Davis, CA, 95616, USA
SO Biochemical and Biophysical Research Communications (**1983**), 115(3), 820-6
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
AB Inorg. pyrophosphate (PPi) is a potent inhibitor of the enzyme that catalyzes synthesis of the glucosyl donor for Escherichia coli glycogen synthesis, ADP-glucose pyrophosphorylase. The Ki is detd. to be 40 .mu.M. ATP, fructose 1,6-diphosphate, and 5'-AMP do not greatly affect the inhibition. PPi exhibits mixed-type inhibition with the other substrate, glucose 1-phosphate. The potential regulation of glycogen synthesis by PPi is discussed.

L13 ANSWER 8 OF 11 CA COPYRIGHT 2003 ACS
AN 101:106377 CA
TI Identification of GTP as a physiologically relevant **inhibitor** of Escherichia coli **ADP-glucose synthetase**
AU Dietzler, David N.; Porter, Sharon E.; Roth, William G.; Leckie, Mary P.
CS Sch. Med., Washington Univ., St. Louis, MO, 63110, USA
SO Biochemical and Biophysical Research Communications (1984), 122(1), 289-96
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
AB Physiol. concns. of GTP can significantly inhibit wild-type E. coli **ADP-glucose synthetase** (the rate-limiting enzyme of bacterial glycogen synthesis); mutant-strain enzymes, known to show less inhibition by physiol. AMP levels, also show less inhibition by physiol. levels of GTP. This decreased inhibition by both AMP and GTP can almost totally account for the higher cellular rates of glycogen synthesis obsd. in the mutant strains. In addn., in metabolic conditions were cellular glycogen synthesis increases, cellular GTP levels are known to decrease. Thus, GTP inhibition is physiol. relevant.

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L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2003 ACS
RN   9027-71-8  REGISTRY
CN   Adenylyltransferase, glucose 1-phosphate (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   Adenosine diphosphate glucose pyrophosphorylase
CN   Adenosine diphosphoglucose pyrophosphorylase
CN   ADP-glucose pyrophosphorylase
CN   ADP-glucose synthase
CN   ADP-glucose synthetase
CN   ADP:.alpha.-D-glucose-1-phosphate adenylyltransferase
CN   ADPG pyrophosphorylase
CN   E.C. 2.7.7.27
CN   Glucose 1-phosphate adenylyltransferase
MF   Unspecified
CI   MAN
LC   STN Files:   AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
       CAPLUS, CEN, CIN, EMBASE, TOXCENTER, USPAT2, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
             733 REFERENCES IN FILE CA (1957 TO DATE)
               1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             734 REFERENCES IN FILE CAPLUS (1957 TO DATE)


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L8 ANSWER 52 OF 59 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1980:150759 BIOSIS
DN BA69:25755
TI EVIDENCE FOR NEW FACTORS IN THE COORDINATED REGULATION OF ENERGY METABOLISM IN ESCHERICHIA-**COLI** EFFECTS OF HYPOXIA CHLORAMPHENICOL SUCCINATE AND 2 4 DI NITRO PHENOL ON GLUCOSE UTILIZATION GLYCOGEN SYNTHESIS ADENYLATE ENERGY CHARGE AND HEXOSE PHOSPHATES DURING THE 1ST 2 PERIODS OF NITROGEN STARVATION.
AU DIETZLER D N; LECKIE M P; LEWIS J W; PORTER S E; TAXMAN T L; LAIS C J
CS DEP. PEDIATR., WASH. UNIV. SCH. MED., ST. LOUIS, MO. 63110, USA.
SO J BIOL CHEM, (1979) 254 (17), 8295-8307.
CODEN: JBCHA3. ISSN: 0021-9258.
FS BA; OLD
LA English
AB The effects of decreased aeration, chloramphenicol succinate, and 2,4-dinitrophenol on the cellular rates of glycogen synthesis and glucose utilization and on the cellular concentrations of adenine nucleotides, glucose 6-phosphate, fructose 1,6-diphosphate, and phosphoenolpyruvate during the 1st 2 periods of N starvation of E. **coli** W4597(K) were studied. A quantitative relationship between the changes in the rates and the accompanying changes in the hexose phosphates was demonstrated. The relationship for glycogen synthesis was different in different sets of metabolic conditions. This difference reflects a change in the steady state level of a previously unknown effector of **ADP-glucose synthetase** (glucose 1-phosphate adenyltransferase, EC 2.7.7.27), the rate-limiting enzyme of bacterial glycogen synthesis. The properties of the hypothetical in vivo effector are consistent with the **inhibitory** effects of pppGpp (guanosine 3'-diphosphate 5'-diphosphate) and ppGpp (guanosine 3'-diphosphate 5'-triphosphate) on this enzyme in vitro. Tetracycline, an **inhibitor** of the synthesis of these nucleotides, apparently prevents the change in the quantitative relationship. The relationship between glucose utilization and the hexose phosphates is altered at the transition to period II of N starvation. This change reflects the alteration of the cellular steady state level of an unknown effector of the glucose phosphotransferase system. Unlike the ATP-hexose phosphate system of shared regulatory effects, the specific effects of the unknown effectors allow the rates of glucose utilization and glycogen synthesis to be altered independently of each other and independently of changes in the rate of glycolysis. This independence allows a greater latitude of response for the individual pathways in more severe metabolic stress or in accomodating the metabolic changes necessary for long-term survival.

L8 ANSWER 45 OF 59 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1984:350331 BIOSIS
DN BA78:86811
TI IDENTIFICATION OF GTP AS A PHYSIOLOGICALLY RELEVANT **INHIBITOR** OF ESCHERICHIA-**COLI ADP GLUCOSE SYNTHETASE** EC-2.7.7.27.
AU DIETZLER D N; PORTER S E; ROTH W G; LECKIE M P
CS DIV. LAB. MED., DEP. PATHOLOGY, WASHINGTON UNIV. MED. SCH., ST. LOUIS, MISSOURI 63110.
SO BIOCHEM BIOPHYS RES COMMUN, (1984) 122 (1), 289-296.
CODEN: BBRCA9. ISSN: 0006-291X.
FS BA; OLD
LA English
AB Physiological concentrations of GTP significantly **inhibited** wild-type E. **coli ADP-glucose synthetase** (the rate-limiting enzyme of bacterial glycogen synthesis). Mutant-strain enzymes known to show less **inhibition** by physiological AMP levels also showed less **inhibition** by physiological levels of GTP. This decreased **inhibition** by AMP and GTP can almost totally account for the higher rates of glycogen synthesis observed in the mutant strains. In metabolic conditions where glycogen synthesis increases, cellular GTP levels decrease. Thus, GTP **inhibition** is physiologically relevant.

-> d bib ab 43 53 56 60 70 72 79 82

L5 ANSWER 43 OF 83 CA COPYRIGHT 2003 ACS
AN 117:187205 CA
TI Comparison of proteins of ADP-glucose pyrophosphorylase from diverse sources
AU Smith-White, Brian J.; Preiss, Jack
CS Dep. Biochem., Michigan State Univ., East Lansing, MI, 48824, USA
SO Journal of Molecular Evolution (1992), 34(5), 449-64
CODEN: JMEVAU; ISSN: 0022-2844
DT Journal
LA English
AB The primary structures of 11 proteins of ADP-glucose pyrophosphorylase are aligned and compared for relationships among them. These comparisons indicate that many domains are retained in the proteins from both the enteric bacteria and the proteins from angiosperm plants. The proteins from angiosperm plants show two main groups, with one of the main groups demonstrating two subgroups. The two main groups of angiosperm plant proteins are based upon the two subunits of the enzyme, whereas the subgroups of the large subunit group are based upon the tissue in which the particular gene had been expressed. Addnl., the small subunit group shows a slight but distinct division into a grouping based upon whether the protein is from a monocot or dicot source. Previous structure-function studies with the Escherichia coli enzyme have identified regions of the primary structure assocd. with the substrate binding site, the allosteric activator binding site, and the allosteric **inhibitor** binding site. There is conservation of the primary structure of the polypeptides for the substrate binding site and the allosteric activator binding site. The nucleotide sequences of the coding regions of the genes of 11 of these proteins are compared for relationships among them. This anal. indicates that the protein for the small subunit has been subject to greater selective pressure to retain a particular primary structure. Also, the coding region of the precursor gene for the small subunit diverged from the coding region of the precursor gene for the large subunits slightly prior to the divergence of the two coding regions of the genes for the two tissue-specific large subunit genes.

L5 ANSWER 53 OF 83 CA COPYRIGHT 2003 ACS
AN 106:29265 CA
TI Identification of the Escherichia coli ADP-glucose synthetase **inhibitor** binding site(s)
AU Larsen, Charles Eric
CS Univ. California, Davis, CA, USA
SO (1986) 148 pp. Avail.: Univ. Microfilms Int., Order No. DA8621503
From: Diss. Abstr. Int. B 1986, 47(6), 2416
DT Dissertation
LA English
AB Unavailable

L5 ANSWER 56 OF 83 CA COPYRIGHT 2003 ACS
AN 105:56941 CA
TI Covalent modification of the **inhibitor** binding site(s) of Escherichia coli ADP-glucose synthetase: specific incorporation of the photoaffinity analog 8-azido-adenosine 5'-monophosphate
AU Larsen, Charles E.; Preiss, Jack
CS Dep. Biochem. Biophys., Univ. California, Davis, CA, 95616, USA
SO Biochemistry (1986), 25(15), 4371-6
CODEN: BICHAW; ISSN: 0006-2960
DT Journal
LA English
AB The photoaffinity agent 8-azido-AMP (8-N3AMP) is an **inhibitor** site-specific probe of the E. coli ADP-glucose synthetase (I). In the

absence of light, 8-N3AMP exhibited the typical reversible allosteric kinetics of the physiol. **inhibitor** AMP. In the presence of light (254 nm), the analog specifically and covalently modified I, and photoincorporation was linearly related to loss of catalytic activity to .gtoreq.65% inactivation. The substrate ADP-glucose provided nearly 100% protection from 8-N3AMP photoinactivation, whereas the substrate ATP provided .apprx.50% protection and AMP, .apprx.30% protection. These 3 adenylate allosteric effectors of E. coli I also protected it from photoincorporation of 8-N3AMP. A structural overlap of the **inhibitor**- and substrate-binding sites is proposed which explains the protection data in light of the known binding and kinetic properties of this tetrameric enzyme.

L5 ANSWER 60 OF 83 CA COPYRIGHT 2003 ACS
AN 101:106377 CA
TI Identification of GTP as a physiologically relevant **inhibitor** of Escherichia coli ADP-glucose synthetase
AU Dietzler, David N.; Porter, Sharon E.; Roth, William G.; Leckie, Mary P.
CS Sch. Med., Washington Univ., St. Louis, MO, 63110, USA
SO Biochemical and Biophysical Research Communications (1984), 122(1), 289-96
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
AB Physiol. concns. of GTP can significantly inhibit wild-type E. coli ADP-glucose synthetase (the rate-limiting enzyme of bacterial glycogen synthesis); mutant-strain enzymes, known to show less inhibition by physiol. AMP levels, also show less inhibition by physiol. levels of GTP. This decreased inhibition by both AMP and GTP can almost totally account for the higher cellular rates of glycogen synthesis obsd. in the mutant strains. In addn., in metabolic conditions were cellular glycogen synthesis increases, cellular GTP levels are known to decrease. Thus, GTP inhibition is physiol. relevant.

L5 ANSWER 70 OF 83 CA COPYRIGHT 2003 ACS
AN 91:171367 CA
TI Evidence for new factors in the coordinate regulation of energy metabolism in Escherichia coli. Effects of hypoxia, chloramphenicol succinate, and 2,4-dinitrophenol on glucose use, glycogen synthesis, adenylate energy charge, and hexose phosphates in the first two periods of nitrogen starvation
AU Dietzler, David N.; Leckie, Mary P.; Lewis, John W.; Porter, Sharon E.; Taxman, Thomas L.; Lais, Cynthia J.
CS Sch. Med., Washington Univ., St. Louis, MO, 63110, USA
SO Journal of Biological Chemistry (1979), 254(17), 8295-307
CODEN: JBCHA3; ISSN: 0021-9258
DT Journal
LA English
AB The effects of decreased aeration, chloramphenicol succinate, and 2,4-dinitrophendl on the cellular rates of glycogen synthesis and glucose utilization and on the cellular concns. of adenine nucleotides, glucose 6-phosphate, fructose 1,6-diphosphate, and phosphoenolypyruvate during the first 2 periods of N starvation of E. coli W4597(K) were studied. A quant. relation between the changes in the rates and the accompanying changes in the hexose phosphates is demonstratd. However, the relation for glycogen synthesis is different in different sets of metabolic conditions. It is suggested that this difference reflects a change in the steady state level of a previously unknown effector of ADP-glucose synthetase (EC 2.7.7.27), the rate-limiting enzyme of bacterial glycogen synthesis. The properties of the hypothetical in vivo effector were consistent with the inhibitory effects of ppGpp (guanosine 3'-diphosphate 5'-diphosphate) and pppGpp (guanosine 3'--diphosphate 5'-triphosphate) on this enzyme in vitro. In addn., tetracycline, an **inhibitor** of the synthesis of these nucleotides, apparently prevents the change in the quant. relation. The relation between glucose utilization and the hexose

phosphates is altered at the transition to Period II of N starvation. In contrast to the ATP-hexose phosphate system of shared regulatory effects, the specific effects of the unknown effectors allow the rates of glucose utilization and glycogen synthesis to be altered independently of each other and independently of changes in the rate of glycolysis. This independence allows a greater latitude of response for the individual pathways in more severe metabolic stress or in accommodating the metabolic changes necessary for long term survival.

L5 ANSWER 72 OF 83 CA COPYRIGHT 2003 ACS
AN 89:175690 CA
TI Biosynthesis of bacterial glycogen. Incorporation of pyridoxal phosphate into the allosteric activator site and an ADP-glucose-protected pyridoxal phosphate binding site of Escherichia coli B ADP-glucose synthase
AU Parsons, Thomas F.; Preiss, Jack
CS Dep. Biochem. Biophys., Univ. California, Davis, CA, USA
SO Journal of Biological Chemistry (1978), 253(17), 6197-202
CODEN: JBCHA3; ISSN: 0021-9258
DT Journal
LA English
AB Pyridoxal phosphate-3H (I-3H) was covalently incorporated into E. coli B mutant strain AC70R1 ADP-glucose synthase by redn. with NaBH4. Two distinct lysine residues can be modified by the allosteric activator, I. The presence of ADP-glucose + MgCl2 prevented pyridoxylation of an ADP-glucose-protected site and allowed modification of the allosteric activator site. The presence of the allosteric effectors fructose diphosphate, AMP, or hexanediol-1,6-diphosphate protected against pyridoxylation of the allosteric activator site and allowed modification of the ADP-glucose-protected site. Incorporation of I into the allosteric activator site gave modified enzyme in a high activity form, even in the absence of fructose diphosphate. This modified enzyme, when assayed in the absence of fructose diphosphate, exhibited activation kinetics similar to nonpyridoxylated enzyme assayed in the presence of fructose diphosphate and was still inhibited by AMP. These data suggest that the allosteric activator site of pyridoxylation is the fructose diphosphate binding site, and is distinct from the **inhibitor** AMP binding site. Incorporation of I into the ADP-glucose-protected site gave a decrease in enzyme activity. This pyridoxylated lysine could be involved in the binding of the substrates ADP-glucose, .alpha.-glucose 1-phosphate, or inorg. pyrophosphate, or in the catalytic mechanism of the enzyme.

L5 ANSWER 79 OF 83 CA COPYRIGHT 2003 ACS
AN 70:25822 CA
TI Activator-**inhibitor**-metal ion interrelations of the adenosine diphospho-glucose pyrophosphorylase from Escherichia coli B
AU Gentner, Norman E.
CS Univ. of California, Davis, CA, USA
SO (1968) 167 pp. Avail.: 68-14,596
From: Diss. Abstr. B 1968, 29(4), 1256-7
DT Dissertation
LA English
AB Unavailable

L5 ANSWER 82 OF 83 CA COPYRIGHT 2003 ACS
AN 67:18058 CA
TI Activator-**inhibitor** interactions in the adenosinediphosphate glucose pyrophosphorylase of Escherichia coli B
AU Gentner, Norman; Preiss, Jack
CS Univ. of California, Davis, CA, USA
SO Biochemical and Biophysical Research Communications (1967), 27(3), 417-23
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
AB The concn. of an activator of the title enzyme (I) fructose-1,6-

diphosphate (II), modulated the sensitivity of the rate of synthesis of adenosinediphosphate glucose (ADP-glucose) to inhibition by AMP and inorg phosphate in E. coli B. Subsatg. levels of II-sensitized I to AMP inhibition. At low II levels, or in its absence, the rate of synthesis was relatively insensitive to inhibition by AMP. The binding of 1 mol. of **inhibitor** appeared to hinder the binding of another mol. of **inhibitor**, instead of facilitating it. The concns. of ATP and MgCl2 might also be involved in the reversal of AMP inhibition. II activated I by increasing the Vmax. and by increasing the affinity of the enzyme for its substrates.

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     FILE 'CA' ENTERED AT 10:00:15 ON 12 MAY 2003
L1             0 S PD 1981
L2            50 S LECKIE M?/AU
L3             0 S S PD=1981
L4             0 S PD=1081
L5        508050 S PD=1981
L6             2 S L5 AND L2
L7            17 S PREISS J/AU
L8           418 S PREISS J?/AU
L9        516204 S PD=1983
L10            9 S L8 AND L9
L11           36 S ADP-GLUCOSE SYNTHETASE
L12       653062 S INHIBITOR
L13           11 S L11 AND L12

=> log hold
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                      49.94      50.57

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                         ENTRY    SESSION
CA SUBSCRIBER PRICE                                      -4.34      -4.34

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 10:11:18 ON 12 MAY 2003
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=> d his

     (FILE 'HOME' ENTERED AT 16:59:22 ON 08 MAY 2003)

     FILE 'CA' ENTERED AT 16:59:32 ON 08 MAY 2003

     FILE 'REGISTRY' ENTERED AT 16:59:37 ON 08 MAY 2003
L1           1 S E.C. 2.7.7.27/CN

     FILE 'CA' ENTERED AT 17:00:35 ON 08 MAY 2003
              S 9027-71-8/REG#

     FILE 'REGISTRY' ENTERED AT 17:01:00 ON 08 MAY 2003
L2           1 S 9027-71-8/RN

     FILE 'CA' ENTERED AT 17:01:00 ON 08 MAY 2003
L3         733 S L2
L4      652233 S INHIBITOR
L5          83 S L3 AND L4

=> log hold                                          SINCE FILE      TOTAL
COST IN U.S. DOLLARS                                    ENTRY    SESSION
                                                        47.07      55.18

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)           SINCE FILE      TOTAL
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CA SUBSCRIBER PRICE

  SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 17:06:53 ON 08 MAY 2003
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=> d his

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L2            48 S ADP GLUCOSE SYNTHETASE
L3            10 S ADP GLUCOSE SYNTHASE
L4           584 S L1 OR L2 OR L3
L5       1112601 S INHIBIT?
L6           129 S L4 AND L5
L7        760659 S BACTERIA OR COLI
L8            59 S L7 AND L6

     FILE 'WPIDS' ENTERED AT 09:33:31 ON 09 MAY 2003
L9             0 S L4 AND L5 AND L7
L10           44 S L4

     FILE 'USPATFULL' ENTERED AT 09:36:01 ON 09 MAY 2003
L11          178 S L4
L12       407271 S L5
L13       113703 S L7
L14          161 S L11 AND L12 AND L13
L15           42 S L13 (P) L11
L16       407271 S L5
L17            1 S 2001:121578/AN
L18            1 S L16 AND L17

=> log hold
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
                                                   ENTRY    SESSION
FULL ESTIMATED COST                                14.95      58.80

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 09:41:34 ON 09 MAY 2003
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